



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/283,907	04/01/99	KELLY	M GR-96-P-8091

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MM41/1003

EXAMINER

COLEMAN, W

ART UNIT	PAPER NUMBER
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2823

DATE MAILED:

10/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/283,907

Applicant(s)

KELLY ET AL.

Examiner

W. David Coleman

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 26-30 is/are rejected.
- 7) ☒ Claim(s) 24, 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-10, 12-21, 23 and 26-30 rejected under 35 U.S.C. 102(e) as being anticipated by Cheung et al., U.S. Patent 6,071,795.

3. Pertaining to claims 1, 8, 10, 12, 13, 14, 15, 23, 26, 27, 28, 29 and 30, see **FIG. 4**, where Cheung discloses a method of separating two layers of material from one another and substantially completely preserving each of the two layers of material, the method comprises:

providing two layers **104** (sapphire substrate) and **102** (gallium nitride film) of material having an interface **118** boundary between the two layers;

irradiating the interface boundary between the two layers or a region in vicinity of the interface boundary with electromagnetic radiation **116** through one of the two layers **104**;

absorbing the electromagnetic radiation at the interface **118** or in the region in the vicinity of the interface and inducing a material at the interface boundary to decompose (column 5, lines 29-35); and

separating the two layers of material.

4. Pertaining to claims 2, and 28, Cheung teaches providing a sacrificial layer at the interface boundary and wherein the absorbing step comprises absorbing the radiation with the sacrificial layer and decomposing the sacrificial layer. The end process leaves a free standing structure which can be used as a light emitting diode or thin film filter (see Abstract).
5. Pertaining to claims 3 and 16, Cheung teaches that the optical band gap of the gallium nitride layer 118, which is the sacrificial layer is smaller than the optical band gap of the sapphire 104.
6. Pertaining to claims 4, 5, 6, 7, 9 and 17-20, Cheung teaches that the absorbing step comprises inducing the decomposition by converting energy of the absorbed radiation into heat (column 5, lines 29-35).
7. Pertaining to claim 9 Cheung discloses applying the semiconductor body 108, 102 and 118 to a silicon substrate 110 as a support material.
8. Pertaining to claim 21 Cheung discloses radiation incident upon the sapphire substrate 104 may be a pulsed excimer layer (column 4, lines 54-55). Cheung discloses the use of multiple pulses (column 5, line6).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 11 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheung et al., U.S. Patent 6,071,795 in view of Ashkin, U.S. Patent 3,808,550.
11. Cheung discloses a semiconductor process substantially as claimed as discussed above. However, Cheung fails to teach the use of two or more laser in the method of separating the two layers of material. See **FIG. 1B** of Ashkin, where he teaches the use of two or more lasers in the fabrication of thin films. In view of Ashkin, it would have been obvious to one of ordinary skill in the art to recognize that two or more lasers provide controllability of vaporized material while held by radiation pressure (Abstract, lines 13-15).

Claims 24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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WDC

September 28, 2001

L. Ph
LONG PHAM
PRIMARY EXAMINER